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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHIEM, DINH D

ART UNIT PAPER NUMBER

2883

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/667,139

Applicant(s)

EBEL, NORBERT

Examiner

Erin D. Chiem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2006.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) 8,9 and 15 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-7, 10-14 and 16-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to applicant's amendment filed on August 21, 2006.

Currently, claims 1-20 are pending.

Claim Objections

In view of the amendment and remarks, the claim objections made in office action (mailed date May 22, 2006) are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-7, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Althaus et al. (US 6,422,766 B1 hereinafter "Althaus") in view of Kluitmans et al. (US 5,065,226 hereinafter "Kluitmans") and Amano et al. (US 6,222,967 B1 "Amano" hereinafter).

Regarding claims 1, 2, 7, 14, and 17 Althaus teaches a device for sending or receiving optical signals wherein an opto-electrical transducer (laser chip 12), together with an associated glass fiber (23) are arranged on a common support characterized in that

- The support is a circuit board (227'); see Fig. 12 comprising different multiple layers of insulating material (col. 4, lines 29-30) and intermediate layers of metal (conductor tracks), with a recess (visible as white open space in Fig. 13) formed therein containing

an opening covered by a lid (329), wherein the lid is made of metal (col. 8, line 15-16), and a bottom on which conductor tracks, configured as microstrips, on the RF conductor track carrier (327B) (col. 12, lines 37-40).

- The transducer (12) is entirely located in the recess and is connected to the conducting tracks,
- The glass fiber exits from the recess through an opening in the circuit board, and
- An electrically active shield is installed around the circuit board (250).

Regarding claim 16, a Peltier element (211) is located on the bottom of the recess on which heats up the conductor track carrier.

However, Althaus does not explicitly teach that the conductor tracks are impedance-matched as recited in claims 1, 2, and 7. Furthermore, Althaus does not explicitly teach the recess being formed integrally with the substrate.

Kluitmans teaches a laser diode module that comprises of microstrips formed on the bottom of the module (Fig. 3; GT₁ and GT₂) that are coupled to a coaxial transmission line at matching impedance (col. 9, lines 35-39) for the purpose of maximizing power transfer from one electrical component to another.

Amano discloses a packaging platform for an optical module that uses injection molding or transfer molding techniques (col. 4, line 25-27) for the purpose of simplifying manufacturing steps.

Since Althaus, Kluitmans and Amano are both from the same field of endeavor, the purpose disclosed by Kluitmans and Amano would have been recognized in the pertinent art of Althaus.

The motivation for impedance matching is for to maximize transfer of power between two or more electronic components. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to match the impedance by providing a high voltage conductor with a large resistor and a low voltage conductor with a low resistor. Furthermore, as clearly shown by Althaus and Kluitmans that a recess is used to house the optoelectronic components as well as the ferrule for coupling the transducer with an optical fiber. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the recess integrally as disclosed by Amano by injection molding or transfer molding. **The motivation** for integrally form the recess is to reduce manufacturing labor; thus reducing manufacturing cost.

Regarding claims 3-4, all three references disclose providing a metal plate as a cover Althaus (col. 1, line 25), Kluitmans (col. 5, line 25), Amano (col. 23, line 49).

Regarding claims 5, 6 and 12, Althaus discloses at least some of the conducting tracks protrude laterally from the recess (col. 12, lines 40-41) to the surrounding edge areas of the circuit board (shown in Fig. 11B as the small rectangles on the peripheral) that extend to a common surface on the inside of the circuit board where they respectively end on a contact surface,

Regarding claims 7, 18 and 19, Kluitmans further describe the extension of the microstrips through the coaxial transmission line to the external module (col. 9, lines 59-62). In order for the connection to be in a reflection-free manner, the inside diameter of the feedthrough is chosen such that the characteristic impedance of a coaxial transmission line is equal to that of the external microstrip. Furthermore, the ratio between the inside diameter of the outer guide of

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the coaxial transmission line and the outside diameter of the inner guide, with a given dielectric constant of the medium between the guides, the characteristic impedance of the coaxial transmission line can be matched to that of the microstrip line (col. 9, lines 33-49). Furthermore, in Fig. 5, the elements are positioned on the conducting tracks in a relatively planar configuration. **The motivation** for using microstrips through coaxial transmission line to connector to the laser diode is to reduce the influence of the inductance of guide pin on the matching of the laser diode module to the characteristic impedance of the external transmission; thus improving power transfer between the microstrips and the laser diode.

Regarding claims 16 and 20 Kluitmans discloses that it is known in various application to provide a thermal contact surface below the laser diode such that the thermal contact surface thermoconductively contact to the base surface and lead the heat away from the laser diode (Col. 3, line 15-25). **The motivation** for providing a thermal contact surface to lead heat away from the laser diode is to prevent the optical module from over heating and wherein the module may contain elements that will break down due to the high thermal energy produced by the laser diode.

Response to Arguments

Applicant traversed the rejection above for the reason of no motivation to combine the reference of Althaus (US 6,422,766 B1), Kluitmans (US 5,065,226), and Amano (US 6,222,967 B1) because applicant believes citation of Amano column 4, lines 25-27 states the package manufacturing process by a mold or injection molding does not overcome the claimed limitation of integral recess as represented by claim 1. However, claim 1 as exemplified by Fig. 1

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illustrates a recess, the combination of injection molding disclosed in Fig. 18b of Amano reference would make clear to one having ordinary skill in the art to use this process to form an integral recess of the same material as the claimed substrate that houses the optical components. Therefore, the ground of rejection is maintained.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Erin D Chiem
Examiner
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